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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/758,525	01/10/2001	Peng George Wang	10114/6	9752
757	7590	12/23/2004	EXAMINER	
BRINKS HOFER GILSON & LIONE P.O. BOX 10395 CHICAGO, IL 60610			SAIDHA, TEKCHAND	
			ART UNIT	PAPER NUMBER
			1652	

DATE MAILED: 12/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/758,525

**Applicant(s)**

WANG ET AL.

**Examiner**

Tekchand Saidha

**Art Unit**

1652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 39-49 and 52-76 is/are pending in the application.
- 4a) Of the above claim(s) 49 & 71-76 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 39-48 and 52-70 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: CRF Problem Report

**DETAILED ACTION****1. Election**

Applicant's election with traverse, filed November 08, 2004, of Group I (claims 39-48 & 52-70) drawn to sugar-nucleotide regenerating enzyme GalK and a glycosyltransferase LgtC with traverse is acknowledged. The traversal is on the ground(s) that the 812-way restriction is unidentifiable because the Examiner has failed to identify each of the 812 groups. This is not found persuasive because a glance at the restriction requirement one can clearly comprehend the various groups. However, this argument is now moot in view of the changed groupings.

Applicants further argue that the claims can be examined together without undue burden, and that the Examiner must show one of the following according to MPEP 808.02, i.e., separate classification, separate status in the art or different field of search, as reasons for insisting upon restriction. Applicants further argue the high cost of the filing/legal fees involved in order to prosecute all the 812 applications.

Applicants' arguments having considered, the restriction requirement is modified as follows in order that Applicants do not undergo serious financial burden. This is not to concede to Applicants' foregoing arguments because each of the combinations of the genes involved in the host cell construct are distinct from each other in terms of enzyme activity as well as the in terms of glycoconjugates produced. Further each of the sugar nucleotides regenerating enzyme(s) belong to different set/class/subclass and has a different substrate requirement as is evident by their names, for example, GalK, a galacto-kinase; PykF, a pyruvate kinase; Ppk, a polyphosphate kinase; Ack, an acetate kinase, and so on.

Art Unit: 1652

Revised restriction groups are as follows:

Group I - Claims 39-48 & 52-70, drawn to a transformed cell comprising – sugar nucleotide regenerating and a glycosyltransferase, classified in class 435, subclass 252.3.

Group II - Claims 49 & 71-76, drawn to a method of producing a glycoconjugate of interest using any one of the sugar nucleotide regenerating enzymes and any one of the glycosyltransferase, classified in class 435, subclass 97.

Inventions 1 and 2 are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the inventions are distinct because the process as claimed can be used to make other and materially different product, such as recombinant production of the enzymes by the host cell construct, instead of producing the glycoconjugate(s) of interest.

2. Since Applicants' election falls into the present Group I, claims 39-48 & 52-70, are under consideration in this examination.

3. Claims 49 & 71-76 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention, the requirement having been traversed.

4. The attempt to incorporate subject matter into this application by reference to a hyperlink embedded in the specification (for example, page 25, line 7) is improper. Incorporation of subject matter into the patent application by reference to a hyperlink and/or other forms of browser-executable code is considered to be an improper incorporation by reference. See MPEP 608.01 regarding hyperlinks in the specification and 608.01(p), paragraph I regarding incorporation by reference.

Art Unit: 1652

**5a. Specification**

The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

**5b. Sequence Rules**

The specification contains sequence disclosures that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 CFR § 1.821(a) and (a)(2). However, the specification fails to comply with one or more of the requirements of 37 CFR § 1.821 through 1.825 as follows: Applicants' submission of a hard copy "Sequence Listing" as required by 37 CFR § 1.821(d) as well as in computer readable form (CRF), filed November 4, 2004, is acknowledged. Appropriate corrections for compliance is required, which includes resubmission of the CRF and a hard copy of the sequence listing, along with a statement that the information contained in the hard copy and the CRF are identical.

CRF problem report is enclosed, to aid the Applicants in the correction for sequence compliance.

**6. Claim Rejections - 35 USC § 112 (first paragraph)**

Claims 39-48 & 52-70 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a host cell transformed with a nucleic acid encoding a sugar-nucleotide regenerating enzyme viz., (1) galactokinase (GalK), (2) galactose-1-phosphate uridylyltransferase (GalT), (3) glucose-1-phosphate uridylyltransferase (GalU) and (4) pyruvate kinase (PykF); and a glycosyltransferase, viz., (5)  $\alpha$ 1, 3-galactosyltransferase, all from *E.coli*, for the production of oligosaccharides ( $\alpha$ -Galactose), does not reasonably provide enablement for the transformation of host cell(s) using any or all the five 5 enzymes (as described above in 1-5) of the biosynthetic pathway for the formation of  $\alpha$ -galactose from any source. The specification does not enable

Art Unit: 1652

any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims.

Claims 39-48 & 52-70 are so broad as to encompass a cell comprising one or more sugar nucleotide regenerating enzyme and one or more glycosyltransferase from any source for the production of any glycoconjugate, which may includes an oligosaccharide, a glycoprotein, a glycolipid, among others. The scope of the claims is not commensurate with the enablement provided by the disclosure with regard to the extremely large number of sugar nucleotide regenerating enzyme(s) and glycosyltransferase(s), from any source, broadly encompassed by the claims.

The specification provides the construction of single super bug or cell comprising (1) galactokinase (GalK), (2) galactose-1-phosphate uridylyltransferase (GalT), (3) glucose-1-phosphate uridylyltransferase (GalU) and (4) pyruvate kinase (PykF); and a glycosyltransferase, viz., (5)  $\alpha$ 1, 3-galactosyltransferase, all from *E.coli*, for the production of oligosaccharides ( $\alpha$ -Galactose).

The prior art describes the glycosyltransferases to be a large family of enzymes that participates in a concerted fashion in the biosynthesis of polysaccharides, and of carbohydrate moieties of glycoproteins and glycolipids. The sequence-function relationship of this class of proteins in prokaryotes and Eukaryotes class of proteins has been recently reviewed [see Breton et al. J. Biochem. 123, 1000-1009 (1998), see abstract, **IDS**], The results of this study allowed the grouping of 12 groups of glycosyltransferases into 5 families. Using a conserved graphics method for protein comparison, conserved structural features were found in some of the glycosyltransferase groups, indicating lack of conserved sequences among the glycosyltransferase(s) family. Further distinction has been observed among the glycosyltransferases from Prokaryotes and Eukaryotes. In eukaryotes, glycosyltransferases consist of a short N-

Art Unit: 1652

terminal cytoplasmic tail, a transmembrane domain, a stem region of variable length and a large C-terminal globular catalytic domain. This is in contrast to bacterial (prokaryotic) glycosyltransferases, some having several transmembrane domains, whereas others bind to membranes even though no membrane domains were predicted [see, Breton et al. (1998), page 1000, column 1-2]. The glycosyltransferases constitute a large heterogeneous class of enzymes, some families include enzymes that catalyze different reactions (see, Breton et al. concluding remarks on page 1007). Since the amino acid sequence of an enzyme determines its structural and functional properties, and because there appears to be a large variation among the different types of glycosyltransferases as well as the source from it is obtained, inserting these genes from any source into a cell construct will not only be undue but lead to transformed cell incapable of yielding the desired product in view of the different members of the enzyme catalyzing different reactions.

While recombinant techniques are known, it is not routine in the art to screen for multiple genes from a variety of sources, to obtain sugar nucleotide regenerating enzyme viz., GalK or GalT or GalU or PykF or Ndk or PpK or AcK or PoxB or Ppa or PgM or NagE or AgmI or glmU or GalNAc kinase or pyrophosphorylase or Ugd or NanA or Cmk or NeuA or Alg2 or AlgI or SusA or ManB or ManC or phosphomannomutase or GalE or GMP or GMD or GFS from any source; **and/or** a glycosyltransferase enzyme from among - LgtB, LgtC (galactosyltransferase); Lgtf, Alg5 or DUGT (glucosyltransferase); LgtA (N-acetylglucosaminyl transferase); UDP-GalNAc:2'-fucosylgalactoside- $\alpha$ -3-N-acetylglactosaminyl transferase; UGT2B7 (glucuronyltransferase); SiaT0160 (sialyltransferase); Alg1 or Alg2 (mannosyltransferase);  $\alpha$  1,3-FucT or  $\alpha$  1,2-FucT or  $\alpha$  1,3,4-FucT (fucosyltransferases)] from any source and integrate into the genome of the cell, as encompassed by the instant claims, and/or transform any cell with these genes in various combination(s) irrespective of the biosynthetic pathway or sequential steps, to obtain the desired product

Art Unit: 1652

would be highly unpredictable and with no reasonable expectation of success in obtaining the desired construct/ activity/product, because of insufficient guidance.

Thus, applicants have not provided sufficient guidance to enable one of ordinary skill in the art to make and use the claimed invention in a manner reasonably correlated with the scope of the claims broadly including a transformed cell comprising one or more sugar-nucleotide regenerating enzyme and one or more glycosyltransferase from any source. Further, the specific limitations of claim 52, for example, GMP, GMD, GFS, etc., remains undescribed for what it stands for or in what pathway are these enzymes operating. The scope of the claims must bear a reasonable correlation with the scope of enablement (In re Fisher, 166 USPQ 19 24 (CCPA 1970)). Without sufficient guidance, determination of cell construct comprising equivalent sequence as relevant to the metabolic or biosynthetic pathway in question, and having the capability of producing the desired biological product(s) is unpredictable and the experimentation left to those skilled in the art is unnecessarily, and improperly, extensive and undue. See In re Wands 858 F.2d 731, 8 USPQ2d 1400 (Fed. Cir, 1988).

7. Claims 39-48 & 52-70 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 39-48 & 52-70, recite a cell comprising one or more sugar nucleotide regenerating enzyme and one or more glycosyltransferase from any source for the production of any glycoconjugate, which may includes an oligosaccharide, a glycoprotein, a glycolipid, among others. More specific recitation includes a cell comprising sugar nucleotide regenerating enzyme comprising, Galk or GalT or GalU or Pykf or Ndk or PpK or AcK or PoxB or



Art Unit: 1652

Ppa or PgM or NagE or Agml or glmu or GalNAc kinase or pyrophosphorylase or Ugd or NanA or Cmk or NeuA or Alg2 or Alg1 or SusA or ManB or ManC or phosphomannomutase or GalE or GMP or GMD or GFS from any source; **and/or** a glycosyltransferase enzyme comprising - LgtB, LgtC (galactosyltransferase); Lgtf, Alg5 or DUGT (glucosyltransferase); LgtA (N-acetylglucosaminyl transferase); UDP-GalNAc:2'-fucosylgalactoside- $\alpha$ -3-N-acetylglactosaminyl transferase; UGT2B7 (glucuronyltransferase); SiaT0160 (sialyltransferase); Alg1 or Alg2 (mannosyltransferase);  $\alpha$  1,3-FucT or  $\alpha$  1,2-FucT or  $\alpha$  1,3,4-FucT (fucosyltransferases)] from any source.

The specification, however, only provides a single representative species - in the construction of single super bug or cell comprising (1) galactokinase (GalK), (2) galactose-1-phosphate uridylyltransferase (GalT), (3) glucose-1-phosphate uridylyltransferase (GalU) and (4) pyruvate kinase (PykF); and a glycosyltransferase, viz., (5)  $\alpha$ 1, 3-galactosyltransferase, all from *E.coli*, for the production of oligosaccharides ( $\alpha$ -Galactose). There is no disclosure of any particular structure to function/activity relationship in the single disclosed species to other species where such sequences are conserved in order to establish a relationship among species. The specification also fails to describe additional representative species of these superbugs by any identifying structural characteristics other than the properties or activity recited in claims, for which no predictability of structure is apparent. Further, the specific limitations of claim 52, for example, GMP, GMD, GFS, etc., remains undescribed for what it stands for or in what pathway are these enzymes operating. Given this lack of additional representative species of these superbugs, Applicants have failed to sufficiently describe the claimed invention, in such full, clear, concise, and exact terms that a skilled artisan would recognize Applicants were in possession of the claimed invention.

Therefore, the written description requirement is not satisfied.

8. **Claim Rejections - 35 USC § 112** (second paragraph)

Art Unit: 1652

Claims 47-48 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 47 & 48 [line 1], recite 'genes are encoded within....'. The claims are indefinite because it is the 'enzyme that are encoded by the gene'. However, as used in the present context, the claims may be amended to recite 'genes are contained within....', or any other suitable expression to overcome this rejection.

9. Claims 52-61, 63-65, 67-70 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 52-61, 63-65, 67-70, recite 'various abbreviations, example GMD, Ndk, etc'. The claims are indefinite because it is unclear what they stand for. The first use of an uncommon abbreviation, must be recited by the full name, and which may be abbreviated in the subsequent claims.

Some confusion may be seen in dependent claims, for example, claims 63-65, which recite abbreviations which is not the same as the general name of the enzyme. Actual definition of the abbreviation is sought. Some may be found in Table 4, starting on page 67, of the instant specification.

10. The following prior art cited in Applicants' Information Disclosure Statement is the closest prior art of record. [Koizumi et al. (1998) Nature Biotechnology, 16: 847-850]. Koizumi et al. teach that the production of UDP-Gal and Globotriose (oligosaccharides) was accomplished by coupling a combination of cell constructs – *E. coli* cells transformed with *galT*, *GalK*, *GalU*, and *ppa*; *E. coli* cells transformed with alpha 1,4-galactosyltransferase gene (*lgtC*); and *C. ammoniagenes* cells produces uridine 5'-triphosphate (UTP) from orotic acid. The reference is not used in any prior art rejection.

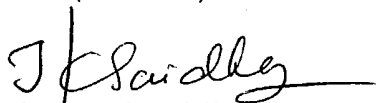
11. No claim is allowed.

Art Unit: 1652

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tekchand Saidha whose telephone number is (571) 272 0940. The examiner can normally be reached on 8.30 am - 5.00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ponnathapu Achutamurthy can be reached on (571) 272 0928. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Tekchand Saidha

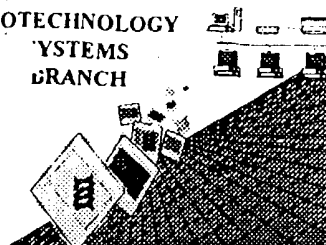
Primary Examiner, Art Unit 1652

Recombinant Enzymes, 02A65 Remsen Bld.

400 Dulany Street, Alexandria, VA 22314

Telephone : (571) 272-0940

December 21, 2004



1652

1600

## CRF Problem Report

The Scientific and Technical Information Center (STIC) experienced a problem when processing the following computer readable form (CRF):

#13

Application Serial Number: 09/758,525B  
Filing Date: 11/10/2001  
Date Processed by STIC: 11/4/2002

STIC Contact: Mark Spencer, 703-308-4212

RECEIVED

NOV 12 2002

TECH CENTER 1600/2900

### Nature of Problem:

The CRF (was):

- ☒ (circle one) **Damaged or Unreadable** (for Unreadable, see attached)
- ☐ Blank (no files on CRF) (see attached)
- ☐ Empty file (filename present, but no bytes in file) (see attached)
- ☐ Virus-infected. Virus name: \_\_\_\_\_ The STIC will not process the CRF.
- ☐ Not saved in ASCII text
- ☐ Sequence Listing was embedded in the file. According to Sequence Rules, submitted file should **only** be the Sequence Listing.
- ☐ Did not contain a Sequence Listing. (see attached sample)
- ☐ Other: \_\_\_\_\_

**PLEASE USE THE CHECKER VERSION 3.1 PROGRAM TO REDUCE ERRORS.  
SEE BELOW FOR ADDRESS:**

<http://www.uspto.gov/web/offices/pac/checker>

Applicants submitting genetic sequence information electronically on diskette or CD-Rom should be aware that there is a possibility that the disk/CD-Rom may have been affected by treatment given to all incoming mail. Please consider using alternate methods of submission for the disk/CD-Rom or replacement disk/CD-Rom. Any reply including a sequence listing in electronic form should NOT be sent to the 20231 zip code address for the United States Patent and Trademark Office, and instead should be sent via the following to the indicated addresses:

1. EFS-Bio (<<http://www.uspto.gov/ebc/efs/downloads/documents.htm>> , EFS Submission User Manual - ePAVE)
2. U.S. Postal Service: U.S. Patent and Trademark Office, Box Sequence, P.O. Box 2327, Arlington, VA 22202
3. Hand Carry directly to:  
U.S. Patent and Trademark Office, Technology Center 1600, Reception Area, 7<sup>th</sup> Floor, Examiner Name, Sequence Information, Crystal Mall One, 1911 South Clark Street, Arlington, VA 22202  
Or  
U.S. Patent and Trademark Office, Box Sequence, Customer Window, Lobby, Room 1B03, Crystal Plaza Two, 2011 South Clark Place, Arlington, VA 22202
4. Federal Express, United Parcel Service , or other delivery service to: U.S. Patent and Trademark Office, Box Sequence, Room 1B03-Mailroom, Crystal Plaza Two, 2011 South Clark Place, Arlington, VA 22202

Revised 01/29/2002

# Raw Sequence Listing Error Summary

## ERROR DETECTED SUGGESTED CORRECTION

SERIAL NUMBER: 09/758,525

ATTN: NEW RULES CASES: PLEASE DISREGARD ENGLISH "ALPHA" HEADERS, WHICH WERE INSERTED BY PTO SOFTWARE

- 1 ☐ Wrapped Nucleics      The number/text at the end of each line "wrapped" down to the next line.  
This may occur if your file was retrieved in a word processor after creating it.  
Please adjust your right margin to .3, as this will prevent "wrapping".
- 2 ☐ Wrapped Aminos      The amino acid number/text at the end of each line "wrapped" down to the next line.  
This may occur if your file was retrieved in a word processor after creating it.  
Please adjust your right margin to .3, as this will prevent "wrapping".
- 3 ☐ Incorrect Line Length      The rules require that a line not exceed 72 characters in length. This includes spaces.
- 4 ☐ Misaligned Amino Acid Numbering      The numbering under each 5th amino acid is misaligned. This may be caused by the use of tabs between the numbering. It is recommended to delete any tabs and use spacing between the numbers.
- 5 ☐ Non-ASCII      This file was not saved in ASCII (DOS) text, as required by the Sequence Rules.  
Please ensure your subsequent submission is saved in ASCII text so that it can be processed.
- 6 ☐ Variable Length      Sequence(s) \_\_\_\_ contain n's or Xaa's which represented more than one residue.  
As per the rules, each n or Xaa can only represent a single residue.  
Please present the maximum number of each residue having variable length and indicate in the (ix) feature section that some may be missing.
- 7 ☐ PatentIn ver. 2.0 "bug"      A "bug" in PatentIn version 2.0 has caused the <220>-<223> section to be missing from amino acid sequence(s) \_\_\_\_\_. Normally, PatentIn would automatically generate this section from the previously coded nucleic acid sequence. Please manually copy the relevant <220>-<223> section to the subsequent amino acid sequence. This applies primarily to the mandatory <220>-<223> sections for Artificial or Unknown sequences.
- 8 ☐ Skipped Sequences (OLD RULES)      Sequence(s) \_\_\_\_ missing. If intentional, please use the following format for each skipped sequence:  
(2) INFORMATION FOR SEQ ID NO:X:  
(i) SEQUENCE CHARACTERISTICS:(Do not insert any headings under "SEQUENCE CHARACTERISTICS")  
(xi) SEQUENCE DESCRIPTION:SEQ ID NO:X:  
This sequence is intentionally skipped  
  
Please also adjust the "(iii) NUMBER OF SEQUENCES:" response to include the skipped sequence(s).
- 9 ☐ Skipped Sequences (NEW RULES)      Sequence(s) \_\_\_\_ missing. If intentional, please use the following format for each skipped sequence.  
<210> sequence id number  
<400> sequence id number  
000
- 10 ☒ Use of n's or Xaa's (NEW RULES)      Use of n's and/or Xaa's have been detected in the Sequence Listing.  
Use of <220> to <223> is MANDATORY if n's or Xaa's are present.  
In <220> to <223> section, please explain location of n or Xaa, and which residue n or Xaa represents.
- 11 ☐ Use of <213>Organism (NEW RULES)      Sequence(s) \_\_\_\_ are missing this mandatory field or its response.
- 12 ☐ Use of <220>Feature (NEW RULES)      Sequence(s) \_\_\_\_ are missing the <220>Feature and associated headings.  
Use of <220> to <223> is MANDATORY if <213>ORGANISM is "Artificial" or "Unknown"  
Please explain source of genetic material in <220> to <223> section.  
(See "Federal Register," 6/01/98, Vol. 63, No. 104, pp. 29631-32) (Sec. 1.823 of new Rules)
- 13 ☐ PatentIn ver. 2.0 "bug"      Please do not use "Copy to Disk" function of PatentIn version 2.0. This causes a corrupted file, resulting in missing mandatory numeric identifiers and responses (as indicated on raw sequence listing).  
Instead, please use "File Manager" or any other means to copy file to floppy disk.

## BEST AVAILABLE COPY

OIPE

## RAW SEQUENCE LISTING

File: C:\CRF3\Outhold Vsr\1758525

File: A:\10114\_71.txt

File: CRF3\01292001-1758525.raw

Does Not Comply  
Corrected Diskette Needed

C--&gt; 13 \*140&gt; CURRENT APPLICATION NUMBER: US/09/758,525

C--&gt; 14 \*141&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 15 \*142&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 16 \*143&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 17 \*144&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 18 \*145&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 19 \*146&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 20 \*147&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 21 \*148&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 22 \*149&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 23 \*150&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 24 \*151&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 25 \*152&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 26 \*153&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 27 \*154&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 28 \*155&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 29 \*156&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 30 \*157&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 31 \*158&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 32 \*159&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 33 \*160&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 34 \*161&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 35 \*162&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 36 \*163&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 37 \*164&gt; CURRENT FILING DATE: 2001-01-10

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C--&gt; 41 \*168&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 42 \*169&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 43 \*170&gt; CURRENT FILING DATE: 2001-01-10

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C--&gt; 45 \*172&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 46 \*173&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 47 \*174&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 48 \*175&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 49 \*176&gt; CURRENT FILING DATE: 2001-01-10

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C--&gt; 51 \*178&gt; CURRENT FILING DATE: 2001-01-10

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C--&gt; 67 \*194&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 68 \*195&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 69 \*196&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 70 \*197&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 71 \*198&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 72 \*199&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 73 \*200&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 74 \*201&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 75 \*202&gt; CURRENT FILING DATE: 2001-01-10

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C--&gt; 79 \*206&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 80 \*207&gt; CURRENT FILING DATE: 2001-01-10

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C--&gt; 82 \*209&gt; CURRENT FILING DATE: 2001-01-10

C--&gt; 83 \*210&gt; CURRENT FILING DATE: 2001-01-10

Missing mandatory <220> to <223>  
features to explain the "Xaa's" in  
the sequence. See  
#10 on the Error  
Summary Sheet.

W--&gt; 50 Gly (Xaa) (Xaa) Gly (Xaa) (Xaa) Gly